Dr pooransari
perinatalologist

REST
IN THE
GOODNESS
OF GOD
Cesarean Hysterectomy

- It is a technically challenging procedure owing to the anatomic and physiologic changes of pregnancy, including a massive increase in blood flow to the uterus at term.

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- Author: Meredith L Birsner, MD; Chief Editor: Carl V Smith, MD

more...
The surgery’s dramatic nature stems from the fact that it is frequently performed in emergent, unplanned situations when a mother’s life is in danger and because it permanently ends future fertility.

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<table>
<thead>
<tr>
<th>Emergency (n = 315)</th>
<th>Nonemergent (n = 3)</th>
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</thead>
<tbody>
<tr>
<td>Uterine atony (53%)</td>
<td>Cervical cancer (66%)</td>
</tr>
<tr>
<td>Morbidly adherent placenta (39%)</td>
<td>Ovarian cancer (33%)</td>
</tr>
<tr>
<td>Uterine rupture (8%)</td>
<td></td>
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<tr>
<td>Extension of uterine incision at delivery (6%)</td>
<td></td>
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<tr>
<td>Other (5%)</td>
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</table>
Knight et al. investigated

- They showed that there was a 1:30,000 chance if undergoing first vaginal delivery,
- 1:1700 chance if undergoing first cesarean delivery,
- rising to as much as a 1:220 risk in a woman who had had two or more cesarean deliveries.
• A further **significant risk** factor was **maternal age over 35**, and parity of three or greater.
• In view of the increasing cesarean delivery rates, and rising maternal age at childbirth (those over 35 have increased from 10 to 20% of all births in the past 10 years
Flood et al.\textsuperscript{15} performed a retrospective cohort study between 1966 and 2005 from three maternity units in Dublin, Ireland

- to identify changing trends in the indication for cesarean hysterectomy.
- **Uterine rupture** decreased as an indication from 40.5 to 9.3%, whilst **placenta accreta** increased significantly from 5.4 to 46.5% during the study period.
• there is potentially a small increased risk of cesarean hysterectomy in those with previous myomectomy, due to abnormal placentation.\textsuperscript{11}

• Squamous intraepithelial lesions of the cervix have been proposed as an indication for cesarean hysterectomy.
• Occasionally, dysplastic or malignant changes may progress in the interval between initial diagnosis and delivery; staging of the disease process may then be inaccurate and lead to inappropriate therapy.

• Of added importance is the sometimes difficult removal of the entire cervix at the time of cesarean hysterectomy.
• The most controversial indication for cesarean hysterectomy is elective sterilization.

• When surgical sterilization alone is the indication, cesarean section followed by a tubal ligation is a far safer procedure than cesarean hysterectomy.
SURGICAL PITFALLS

• The vessels that supply the uterus, ovaries, and bladder are substantially larger and more tortuous in pregnancy than they are in the nonpregnant state.

• Meticulous care in the manipulation of clamps, cutting of pedicles, and placement of sutures is required to prevent severe bleeding.
• Edema of the structures surrounding the uterus allows easy dissection of surgical planes but produces large pedicles from which blood vessels may escape.

• Special attention must be given to the proper size of pedicles and careful hemostatic suturing techniques.
• Great care is necessary to avoid injury to organs that are adherent to the uterus, bladder, adnexa, and abdominal wall.
• The surgeon must be prepared to recognize and repair injuries of the urinary tract.
• Cesarean hysterectomy is often performed in the presence of uterine trauma or rupture in which hematomas of the broad ligament and neighboring structures make visualization difficult and distort anatomic relations.

• Careful exposure, skilled assistants, and attention to hemostasis are of primary importance.
• the surgeon has the luxury of a complete preoperative evaluation of the patient and her hematologic and coagulation status,

• and to choose experienced assistants and discuss procedures, necessary instruments, and sutures before the operation
A vertical incision provides best exposure, but often when performed as an emergency a transverse incision has been used and may be adequate. If required, division of rectus muscle with ligation of the inferior epigastric arteries (modified Maylard) is helpful.
• the type of uterine incision used is guided by obstetric indications; however, a low vertical incision is less likely to extend and lacerate the uterine vasculature.

• In all stressful surgical situations, the technique with which the surgeon is most comfortable is appropriate.
• If the surgeon is suspicious that the integrity of the bladder wall has been breached at any time during the operation, the bladder may be filled with an opaque solution and the operating field inspected for extravasation of the solution.
• If there has been an inadvertent cystotomy, the area is dissected so that two rows of sutures can be placed without tension.

• The bladder is closed with two continuous layers of 4.0 polyglycolic sutures, with the second layer imbricating the first.
• The bladder is then refilled to ensure its integrity. When bladder repair is necessary, postoperative antibiotic coverage and Foley catheter drainage of the bladder should be continued for 7–10 days.
Maternal morbidity
• with cesarean hysterectomy may be as high as 56%.
• The principle problems are bleeding (blood loss requiring transfusion occurs in over 40% of cases) and urinary tract injury (quoted as up to 16%).

• Intraoperative bleeding difficulties arise from the adnexal pedicles, the uterine vascular pedicles, the cardinal ligaments, or angles of the vagina arise at the time of bladder dissection.
In a review of cesarean hysterectomies at University of Mississippi Medical Center, bleeding from adnexal pedicles was a common cause of intraoperative bleeding and early postoperative bleeding and an indication for removal of one or both adnexa.
• Pedicles that are too large and clamp manipulation that tears pedicles away from the uterine wall are the most common continuing problems that result in uterine vascular and cardinal ligament bleeding.

• Bleeding at the vaginal angles is often caused by injudicious traction and manipulation of stay sutures that open ascending branches of the vaginal arteries.
• Vigorous use of the suction tip and retractors in the region of the bladder pillars, angles of the vaginal cuff, and beneath the base of the bladder can cause troublesome venous bleeding for which it is often difficult to achieve hemostasis.
• Emergent cesarean hysterectomy presents special bleeding problems.
• Coagulopathies may be present when the patient is first encountered or may develop as the case progresses.
• In drastic emergencies, the aorta may be compressed for a time to stop copious bleeding while the field is cleared for a more direct attack on the bleeding problem.
The use of surgical packs is a frequently overlooked adjunct in obtaining hemostasis.

Temporary packing of a bleeding area can offer time, similar to that of compressing the aorta, and allow blood component replacement to catch up with a possible coagulopathy.
• Whenever we leave a pack in the abdomen, we administer broad-spectrum antibiotics until the packs are removed, usually within 72 hours.

• The **bladder and ureters** are at risk during cesarean hysterectomy.

• Hematomas distort expected anatomic relations. The bladder is at greatest risk during its initial dissection from the anterior cervical wall.
• **vesicovaginal fistulas** have resulted from incorporation of the tented corners of the bladder in these clamps or sutures.

• Other causes of bladder fistulas include **postoperative abscess formation**, which can also contribute to ischemic necrosis at the base of the bladder and may produce a fistula.
• The processes of uterine rupture and cesarean section scar dehiscence may directly injure the bladder and/or ureters.

• It is usually the unrecognized bladder injury that results in vesicovaginal fistula; the properly repaired bladder usually heals without difficulty.
• the ureters are most closely approached at three points during the dissection in cesarean hysterectomy:
• the infundibulopelvic ligament ligation site (when adnexal structures are removed),
• the uterosacral ligament dissection, and
• the uterine vascular and cardinal ligament pedicles. The most important principle in approaching the ureter in complicated cesarean hysterectomy cases is direct visualization.
### Table 3. Major operative and postoperative complications: review of 5185 cesarean hysterectomy cases, 1951–1984

<table>
<thead>
<tr>
<th>Complication</th>
<th>Percentage of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postoperative hemorrhage</td>
<td>3.30</td>
</tr>
<tr>
<td>Bladder laceration</td>
<td>2.80</td>
</tr>
<tr>
<td>Ureteral injury</td>
<td>0.44</td>
</tr>
<tr>
<td>Fistula (total)</td>
<td>0.57</td>
</tr>
<tr>
<td>Vesicovaginal</td>
<td>0.46</td>
</tr>
<tr>
<td>Ureterovaginal</td>
<td>0.10</td>
</tr>
<tr>
<td>Rectovaginal</td>
<td>0.02</td>
</tr>
<tr>
<td>Thromboembolism</td>
<td>0.52</td>
</tr>
<tr>
<td>Overall morbidity</td>
<td>35.3</td>
</tr>
<tr>
<td>Maternal mortality</td>
<td>0.70</td>
</tr>
</tbody>
</table>
POSTOPERATIVE MORBIDITY AND MORTALITY

• In patients with evidence of chorioamnionitis at the time of cesarean hysterectomy, broad-spectrum antibiotic coverage including ampicillin, gentamicin, and clindamycin is continued postoperatively.

• All women receive thromboprophylaxis for at least 7 days postoperatively, and use of graduated elastic compression stockings is advised.
Regarding mortality, Table 3 shows the results from a literature review series, and the maternal mortality rate can be seen to be seven per 1000 cases. 

<table>
<thead>
<tr>
<th>Complications</th>
<th>Percentage of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urinary tract infection</td>
<td>17.7</td>
</tr>
<tr>
<td>Vaginal cuff hematoma/infection</td>
<td>14.1</td>
</tr>
<tr>
<td>Atelectasis/pneumonia</td>
<td>4.9</td>
</tr>
<tr>
<td>Wound infection/dehiscence</td>
<td>5.0</td>
</tr>
<tr>
<td>Laparotomy for bleeding</td>
<td>1.8</td>
</tr>
<tr>
<td>Fistula</td>
<td>1.1</td>
</tr>
<tr>
<td>Vesicovaginal</td>
<td>0.9</td>
</tr>
<tr>
<td>Ureterovaginal</td>
<td>0.2</td>
</tr>
<tr>
<td>Intestinal obstruction</td>
<td>0.3</td>
</tr>
<tr>
<td>Pulmonary embolism</td>
<td>0.2</td>
</tr>
<tr>
<td>Overall morbidity</td>
<td>30.1</td>
</tr>
<tr>
<td>Mortality*</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Table 5. Postoperative complications of cesarean hysterectomy at the Louisiana State University Service – Charity Hospital of New Orleans (943 cases)
THANK you!